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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/178,249 10/23/98 JIN

C TI-26111

023494 MM91/0119  
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EXAMINER

LEE, G  
ART UNIT PAPER NUMBER

2825  
DATE MAILED:

01/19/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

<b>Office Action Summary</b>	<b>Application No.</b> 09/178,249	<b>Applicant(s)</b> JIN ET AL.	
	<b>Examiner</b> G. Lee	<b>Art Unit</b> 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

### Attachment(s)

- |   |  |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 20) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### **Review of Appellants' Brief**

1. In further review of the appellant's brief during an art unit meeting it was found that <sup>prosecution</sup>~~rejection~~ of the instant application be reinstated.

### **Response to Applicant's Argument**

2. After review of applicant's amendments and comments, the examiner finds such arguments unpersuasive. Applicant's comments as to Smith et al. and Radhakrishnan are well taken, however in further review of the prior art, the examiner has found the Smith et al. and Radhakrishnan read upon applicant's claimed invention. As these are a new grounds for rejection, but the above rejections are not to be considered final.

### **Claim Rejections - 35 USC § 112**

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim stipulates that ammonia is bubbling through a water solution, however in the specification no water solution is disclosed.

### **Claim Rejections - 35 USC § 102**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al.

In view of claim 1, Smith et al. discloses a thin film aerogels on a substrate where it is suggested that to catalyze the precursor with 0.5 M (liquid implied) of ammonia nitrate (Col.24 lines 18-20) converted into a vapor form to flow over the dielectric layer (Col. 31 lines 5-10).

In view of claim 2, Smith et al. uses ammonia in'a catalyst (Col. 31 lines 4-6).

In regard to claim 4, the applicant is on office notice that it is notoriously well known in the art to use a water bubbler to introduce a gas into a reactor. It would have been obvious to one skilled in the art in the case of ammonia, to use a solution of  $\text{NH}_4\text{OH}$ .

In regard to claim 6, Smith et al. provides for the use of a polymer based on silicon alkoxides to be used (Col. 31 lines 30-40).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole

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would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. and Radhakrishnan.

In view of claim 3, Smith et al. discloses using a gel material for semiconductor thin dielectric films using an ammonia precursor as a catalyst. However, Smith et al. does not explicitly state that an ammonia and water mixture is needed in the process. But, Smith et al. does indicate that the entire process is done in a humid environment (Col. 9 line 48-50) where the ammonia catalyst can include water (H<sub>2</sub>O). Furthermore, it is well known in the art that for device making processes it is obvious to use mixtures that are held constant for uniform device results.

In view of claim 5, Smith et al. produces a dielectric thin film using ammonia as a catalyst as indicated above. However, Smith et al. does not show the chamber system used to make the thin film. Radhakrishnan depicts a low temperature deposition system for making thin films. The system shown reveals a chamber where the substrate holder is along a central axis exposed to a vapor flow of ammonia along the same axis (Fig. 1).

In view of claim 7, Smith et al. provides a method of making a thin film device, but does not elaborate on the system used or the characteristics thereof. Radhakrishnan uses such a system with a delivery method for purging the chamber (Col. 10 lines 35-40), but does not stipulate the time required to

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do it. It would have been obvious to one having ordinary skill in the art at the time the invention was made to ascribe some time for flushing or purging the chamber during the processing of thin film devices. Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In summary, while Smith et al. includes making a device using ammonia and other processes to create the dielectric layer thereof. Smith et al. does not disclose the chamber system required to make the dielectric layer. Whereas, Radhakrishnan includes many aspects of the device layer, included is many more aspects of the chamber deposition system used to make it. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of Smith et al. with Radhakrishnan with the expectation of achieving better variation of results. Radhakrishnan suggests more than a few separate systems that could be used to make the same layer of the same device, but the reference "the preferred system and method can be modified..." suggests that the system used to make the device is as important as the method used in making the device, if not more so.

### ***Contact Information***

8. Any inquiry concerning this communication or earlier communications for the examiner should be directed to Granvill Lee

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whose telephone number is (703) 306-5865. The examiner can be normally reached on Monday thru Thursday from 7:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Matthew Smith can be reached on (703) 308-1323. The fax phone number for this group is (703) 308-7722.

Any inquiry of a general nature relating to status or otherwise should be directed to the receptionist whose telephone number is 703-308-1782.

Examiner  
Granvill Lee  
Art Unit 2825

Gl  
1/8/01



MATTHEW SMITH  
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